

ENERGY EFFICIENCY SUCCESS STORY | 2012

ARMOCIDA FAMILY HOME

Prepared by Concord Light, your local electric utility



Bill Armocida lives with his wife and two children in this 1990's colonial on Harrington Avenue across from Marshall Farms. A 2-story addition brought the total square footage of the home to 2,900.



Energy Audit

Concord Light performed a no-cost energy audit of the Armocidas' home. Bill opted to pay Concord Light's auditor a special diagnostic fee to use infrared imaging to check for leaks in the home's heating and cooling ducts.

Recommended Upgrades Included:

- Replacement of 21-Year Old Oil Heating System
- Duct Sealing
- Attic Insulation & Attic Hatch Cover
- Under-Floor Insulation

"The audit was great. The auditor determined that poor air flow from the furnace to the 2nd floor was the reason for the 5 - 6° F temperature differences between the 1st and 2nd floors. And, the infrared imaging revealed a lot of leaks in the ductwork." -- Bill

Heating and Air Conditioning System Improvements



The 21-year old forced hot air oil-fired furnace was replaced with a modern oil-fired heating system that has an Annual Fuel Utilization Efficiency (AFUE) of 87%.

The leaky air ducts in the basement were replaced with new ducts that were sealed and insulated.



New, insulated, sealed ductwork and an additional air handler were installed in the attic to serve the 2nd floor. This solved the poor air flow problem that contributed to the 5 - 6°F temperature difference between the 1st and 2nd floors.

Separate programmable thermostats on the 1st and on the 2nd floors call for warm or cool air when each floor needs it. Previously, having just a single thermostat in the house, located on the 2nd floor, had contributed to the inconsistent temperatures between the 1st and 2nd floors.

Heating and Air Conditioning System Improvements (con't)

The Armocidas also installed an electrically powered heat pump system in their home. By efficiently moving heat from the outside air to the inside of the house, the heat pump keeps the house warm using less energy than the oil-fired furnace when the outdoor temperature is above 45° F.

The two programmable thermostats in the Armocidas' home have outdoor temperature sensors that decide when to shut off the heat pumps and to turn on the oil-fired furnace.



In addition to heating the Armocidas' home on mild days during the heating season, the heat pump provides air conditioning during the summer by removing heat from the indoor air and exhausting it to the outdoors.

Heating and Air Conditioning System Costs

System	Cost
New Furnace & Heat Pump	\$28,257
Concord Light Central Air Conditioning Rebate	- \$ 625
Net Cost	\$27,632

"The comfort benefits of replacing the heating system were huge! Previously, we'd fiddle with the air supply and return vents, but it never helped much. It's good to know that the temperature will be consistent on both floors now."

-- Bill

Attic Improvements



Work was done in the attic to make sure that all open areas of the attic floor were fully covered with fiberglass batts.

Basement Improvements



The basement ceiling was also insulated to provide the under floor insulation that the auditor recommended

Renewable Energy

Once they had made their home as energy efficient as possible, the Armocidas installed a solar photovoltaic system to supply some of the electricity they use. The system is on track to pay for itself in seven years.

Concord Light provided the Armocidas with a \$3,125 rebate to help offset the purchase price of the PV system.



For more information on Concord Light's free home energy audits and energy efficiency and renewable energy rebates, go to concordma.gov/cmlp or contact Jan Aceti at 978-318-3151 or jaceti@concordma.gov.